

REMARKS

Reconsideration of this application is respectfully requested. Claims 20, 25, 26 and 28 have been cancelled previously, and claims 1-19, 21-24 and 27 remain pending in the application.

The undersigned appreciates the courtesy extended by Examiner George C. Monikang in a telephone interview on May 13, 2008. During that interview, the Draft Response after Final, submitted by applicant on April 4, 2008, was discussed and the Examiner submitted that there were several arguments made in the Remarks that appear to distinguish over the prior art. The Examiner states further searching would be necessary and a Request for Continued Examination was discussed, which is concurrently filed herewith.

Claims 1-9, 11, 13-19 and 27 have been rejected under 35 USC §102(e) as being anticipated by Ureda (U.S. Patent No. 6,712,177). Claims 10, 12 and 21-24 have been rejected under 35 USC §103(a) as being unpatentable over Ureda in view of Lehman (U.S. Patent No. 6,112,847).

With respect to independent claim 1, the Examiner states that Ureda discloses a mid-range loudspeaker array. Although the cross-fired multiple horn arrangement of Ureda is a mid-range loudspeaker, for example based on the graphs of Figures 1 to 3 of Ureda, nevertheless Ureda does not disclose anything amounting to an array, which implies interaction between the loudspeakers. Further, Ureda completely fails to disclose the frequency range of 250Hz to 8KHz. Column 13, line 66 to column 14, line 10 of Ureda merely discloses a multi-way speaker sound system with the cross-fired horn system being combined with a low frequency sound source, but there is absolutely no disclosure whatever of the frequency range of the horn system.

The next feature recited in claim 1 is that the loudspeaker array comprises at least one line source. The term "line source" as used in this technology refers to a line array of loudspeakers which interact with each other so as to provide a narrower dispersion pattern in planes passing through the "line" of the line source. There is no

disclosure whatever of this in Ureda and, indeed, the arrangement of Ureda would not appear to make any significant use of interaction between loudspeakers for changing the dispersion pattern vertically or horizontally.

In fact, Ureda discloses what is known in this technical field as a “staircase” arrangement for obvious visual reasons. Such an arrangement is intended to provide as broad a horizontal dispersion pattern as is permitted by the individual dispersion patterns of each “stair”, which individual patterns are angled apart sufficiently so that they “add” together to create a bigger dispersion angle without any significant interaction between them.

The next recited feature of claim 1 is that the at least one line source comprises a curved one-dimensional array of loudspeakers and the Examiner refers to Figure 19 of Ureda. Taking Figure 19 in isolation is deceptive as this is merely a plan view of a cross-fired horn system.

Figure 18 of Ureda gives a better impression of the system and, from this, it is clear that the horns do not form any sort of curved one-dimensional array.

The next recited feature in claim 1 is that each loudspeaker comprises a cone diaphragm driver. Ureda is exclusively concerned with compression drivers (for example, as stated in column 4, lines 57-58 and shown throughout the drawings of Ureda), as is conventional in horn loudspeakers, and therefore excludes the use of cone diaphragm drivers. The next recited feature is that each loudspeaker has a dispersion pattern angle of less than 60° perpendicular to the one dimension of the array. For any portions of the recited array which are oriented as a vertical line array, this plane will be the horizontal plane, but the effective plane at each loudspeaker will tilt according to the angle of the loudspeaker in the vertical plane away from vertical. The only disclosure of dispersion angles in Ureda is given in column 11 at lines 27 to 30, which state that the horizontal dispersion angle is typically 60°. Ureda therefore fails to disclose a dispersion pattern angle of less than 60°.

The next recited feature in claim 1 is that the loudspeakers have propagation axes in a common plane ("coplanar") and the Examiner refers to the above-noted passage in column 11. In fact, as is clear from all of the drawings of Ureda, the propagation axes, such as 80 and 90 shown in Figures 6 and 7, are not coplanar and cannot possibly be coplanar because of the nature of the cross-fired horn system. It should be borne in mind that, for example, Figures 6 and 7 are vertical and side views of the system which may give the illusion that the propagation axes are coplanar but, as is entirely clear from Figure 5 which shows the same embodiment, these axes are not coplanar and are intrinsically not coplanar. Given that there is no such common plane disclosed anywhere in Ureda, it is impossible for such plane to be vertical with the speaker system in use.

The next recited feature in claim 1 is that each adjacent pair of loudspeakers is physically time-aligned in a direction bisecting the propagation axes. Although the geometry of the invention is totally and intrinsically different from that of Ureda, it would appear that the propagation paths are such as to provide time alignment at the mouths of the horns. However, this is not stated anywhere in Ureda, column 7 of which is not dealing with time-alignment, but is dealing with vertical divergence or convergence of the horn output propagation axes.

The next recited feature in claim 1 refers to the angle between the propagation axes of adjacent pairs of loudspeakers in the line source. These angles are defined in terms of what is subtended by the propagation axes. However, "subtending" only has meaning if the propagation axes intersect each other, as they are required to do in claim 1. Again, the propagation axes of the horns in Ureda do not and cannot possible intersect each other because of the geometry of the system. Nevertheless, if we take the angles or angular ranges specified in the last part of claim 1, then there is no disclosure in Ureda of such angular ranges and certainly not in the passage in column 7. As mentioned above, this passage is merely referring to the vertical divergence angle without specifying any particular range. Indeed, the angle would appear to be very largely arbitrary and certainly has nothing whatever to do with the need for interaction between the

loudspeakers of a line source array, as required by the present invention. This is made explicitly clear in Ureda in the passage from column 11, line 66 to column 12, line 11. In particular, the final sentence of this passage clearly indicates that the vertical divergence angle may be selected essentially arbitrarily in the range from -180° to $+180^{\circ}$. This in itself makes it clear that there is no "vertical interaction" of the horns in Ureda. The angular ranges specified in the last part of claim 1 are essential and non-arbitrary because these ranges are required in order to provide the line source array effect.

The arguments made above with respect to claim 1 apply similarly to independent claim 27.

With respect to the dependent claims, claims 2 to 5 deal with progressively decreasing "horizontal" dispersion pattern angles, all of which are substantially less than the horizontal angle specified in Ureda.

Claim 6 specifies the same dispersion pattern angles of all the loudspeakers. Ureda does not give any guidance on this but, given that the embodiments use substantially identical horns for the cross-fired system, it is likely that equal dispersion angles are to be provided. Claim 7, however, explicitly defines that an upper angle is less than a lower angle and there is no such disclosure anywhere in Ureda. The passage in column 7 to which one is referred makes no mention whatever of this. In fact, the horns defined in this passage are identical and it may therefore be assumed that the horizontal dispersion angles will also be identical. The vertical dispersion angle defined in claim 8 is probably implicitly disclosed by Ureda.

Claim 9 refers to each of the loudspeakers being horn-loaded and this is disclosed in Ureda.

Claim 11 defines that each loudspeaker produces a substantially plane wave. Ureda is entirely silent on this issue and Figure 19, to which the Examiner refers, gives no help whatever. In fact, as would be clearly apparent to a person of ordinary technical skill in this field, the nature of the horns disclosed by Ureda are such that plane waves will not be produced at all.

Claim 13 refers to the common plane and the one dimension, neither of which are disclosed anywhere in Ureda and certainly not in the passage in column 7.

Claim 14 defines the subtended angular range, and, for the reasons given above in relation to claim 1, Ureda does not disclose this.

Similarly, claims 15 to 18 deal with the geometry of the present system. The geometry of Ureda is so completely different that it completely fails to disclose the features of any of these claims.

Claim 19 discloses that the loudspeakers are of the same type and this is probably disclosed, at least implicitly, in Ureda.

Given that the Examiner's rejection of lack of novelty of claim 1 fails for the reasons given above, then the challenge to various dependent claims on the basis of 35 USC §103(a) must inevitably fail. Nevertheless, the Examiner's suggestion that Lehman discloses the features of claim 10 is incorrect. Lehman discloses conventional horns without any inner horn-loading member and so cannot possibly disclose the features of claim 10.

For what it is worth, Lehman does disclose the feature of claim 12 that the line source comprises at least three loudspeakers. Lehman would appear to disclose a line source with interaction between the loudspeakers. As regards claim 21 which defines a plurality of line sources disposed laterally adjacent each other, it is arguable that Lehman is disclosing such an arrangement in his Figure 7 which does fall within the wording of this claim.

Claim 22 defines the angle between common planes of adjacent line sources. There is no disclosure whatever of this in either Ureda or Lehman and the passages to which the Examiner refers are irrelevant. Similarly, regarding claim 23, there is no reference to time-alignment between adjacent line sources in either document and the passage in column 7 of Ureda is completely irrelevant to this.

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Claim 24 refers to the loudspeakers of a plurality of line sources of the same type. There is no disclosure in Ureda of any arrangement having one line source, let alone two or more. Further, in the arrangement shown in Figure 7 of Lehman, the loudspeakers in what might be thought of as laterally adjacent sources, are in fact completely different from each other

Based on the foregoing, the Examiner is requested to withdraw the rejections and pass this application to issue with claims 1-19, 21-24 and 27 being deemed allowable.

The Examiner is invited to telephone the undersigned if any issues remain unresolved.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'William L. Falk', written in a cursive style.

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